KIRTLANDIA®

The Cleveland Museum of Natural History

July 2002 *Number 53:35–36*

NOTE

FRESHWATER MUSSELS (BIVALVIA: UNIONIDAE) OF THE OHIO & ERIE CANAL, CUYAHOGA VALLEY NATIONAL PARK, OHIO

MICHAEL J. S. TEVESZ, LOUIE RUNDO, AND ROBERT A. KREBS
Department of Biological, Geological, and Environmental Sciences
Cleveland State University, Cleveland, Ohio 44115-2406
m.tevesz@csuohio.edu

Freshwater mussels (Bivalvia: Unionidae) have become established in canals in Ohio and the eastern United States in addition to their indigenous habitat of permanent natural lakes and streams. For example, Higgins (1858, p. 550) noted the following for the Columbus feeder canal of the Ohio & Erie Canal: "Many species have traversed the whole length of the canal, and many species there thrive and become abundant which are quite rare in the adjacent rivers." Sterki (1907) suggested that the unionid species *Elliptio complanata* (Lightfoot) may have gained access to the Tuscarawas River from Lake Erie via the Ohio & Erie Canal, although Barber (1982) suggests other avenues of dispersal. In addition, it was observed that the stillwater species *E. complanata*, *Strophitus undulatus* (Say), and *Utterbackia imbecillis* (Say) "seem to thrive" in parts of the canal in the Chesapeake & Ohio Canal National Historical Park, Maryland (Anonymous, 1998). Nevertheless, published information on the unionid populations of canals in the United States is scarce. For northeastern Ohio, Smith (2000) and Smith et al. (2002) reported that sections of the Ohio & Erie Canal located within the Cuyahoga Valley National Park supported a thriving freshwater mussel population composed of the species *Pyganodon grandis* (Say) and *Toxolasma parvus* (Barnes). The canal, which is normally difficult to survey for mussels because of steep banks, vegetative cover, and a soft, muddy substrate, had been drained locally during the summer of 1998 for repairs, revealing a large population of recently dead and dying mussels. Eight hundred fourteen *P. grandis* and 48 *T. parvus* were counted in a 2.4 km long section of dry canal bed (Figure 1).

Sections of the canal were drained again, during the summer of 2000, for a construction project involving the Tinkers Creek aqueduct where it crosses the canal. From June 16 through July 17, a 3.3 km long section of dry canal bed with an area of approximately 33,000 m^2 was visually surveyed to provide new data on mussel occurrence. The surveyed area of the canal extended from the northern boundary of the Cuyahoga Valley National Park, at Rockside Road, to the Tinkers Creek aqueduct (Figure 1). This survey revealed the presence of 838 *P. grandis*, 11 *T. parvus*, and 2 *U. imbecillis*, all freshly dead or dying. Of these, 20 *P. grandis* and 3 *T. parvus* were found as part of a "midden accumulation" left behind by an animal. The midden was associated with what appeared to be a muskrat burrow and was located about 1 m above the canal bottom on the east bank, roughly 1 km south of Rockside Road. The species *U. imbecillis*, while rare in the canal, is more common in lakes in the lower Cuyahoga River valley (Smith, 2000; Smith et al. 2002) and within the Cuyahoga River in its upper reaches (Huehner, 1985; Hoggarth, 1990).

Freshwater mussels ("*Unio*") were reported from the Ohio & Erie Canal as early as the 1830s. Wied-Neuwied (1906, p. 150) described the following for late June, 1834: "After we left Circleville we saw, on the canal, a great num-

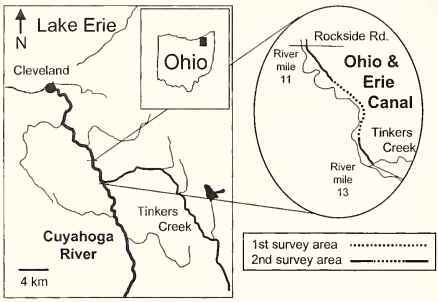

Figure 1. The lower Cuyahoga River and its tributaries, including Tinkers Creek. The search region of the Ohio & Erie Canal (magnified for detail) covers the portion of the canal that parallels the river between river mile 11 and river mile 13, as measured from the mouth of the Cuyahoga River at Lake Erie.

ber of shells (*Unio*), of a greenish color, with darker stripes, which were very frequent here; most of them were floating without the animal, which was, however, found dead in some of them." The species he described is likely *P. grandis*, which has the vernacular name of "giant floater." This species colonized the canal almost immediately, because the northern segment of the canal originating at Cleveland was opened in July, 1827, and the section around Circleville was opened in October, 1831 (Scheiber, 1969, p. 51). Other historical information on the mussel fauna of the canal includes a report by Dean (1890) of the occurrence of the species *Lasmigona complanata* (Barnes).

These recent and historical data have the following implications: First of all, the Ohio & Erie Canal has long been a viable habitat for mussels. In addition, the species inhabiting the canal may have changed in response to the canal being a more loticlike habitat during its period of usage, and then becoming a more lenticlike habitat in its abandonment. For example, *L. complanata* is a typical riverine species and inhabits upper reaches of the Cuyahoga River today, but no longer the canal. Moreover, *P. grandis* and *U. imbecillis* also occur in lakes and ponds within the national park, although the former apparently colonized the canal shortly after it opened. *Toxolasma parvus* has been observed only in the canal within the national park, although two spent, disarticulated valves were reported from the upper reaches of Tinkers Creek outside of the park boundaries by Krebs et al. (2002). Finally, this study demonstrates that the canal provides habitat for abundant mussel populations within the Cuyahoga Valley National Park. Therefore, careful management of the canal will assure their continued existence in the park.

Acknowledgments

The support of the George Gund Foundation and a Cleveland State University supplemental EFFRD grant to MJST are gratefully acknowledged. This manuscript was improved by reviews provided by M. A. Hoggarth and J. B. Keiper.

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